XLIV.—*A Revision of the Myxinoids of the Genus* Myxine.

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In 1912 ('Annals,' (8) ix. p. 534) I published a synopsis of the genus *Heptatretus*, comprising the Myxinoids with 6 to 14 branchial apertures on each side and with the external branchial ducts subequal in length. A related genus, *Paramyxine*, Dean, with 6 branchial apertures on each side, approaches *Myxine* in that the apertures are approximated and the anterior external ducts are longer than the posterior ones; there is a single species from the Sagami Sea, Japan, viz. *P. atami*, Dean (Journ. Coll. Tokyo, xix. 1906, Art. 2, p. 11, fig. D, pp. 14 & 22, pl. i. figs. 3–5). *Myxine* is the only other genus of the family.

Myxine.

Myxine, Linn. Syst. Nat. ed. 10, i. p. 650 (1758).
Gastrobranchus, Bloch, Ausl. Fisch. xii. p. 66 (1795).

Myxinoids with 5 to 7 branchial sacs, and with a single external branchial aperture on each side.

Atlantic coasts of Europe and N. America; Pacific coast of Colombia; Chile and Patagonia; South Africa; Japan.

The species are all extremely similar, and the characters of most importance in distinguishing them appear to be the number of the teeth and of the pores on each side of the body; the teeth increase in number as the fish grows, so that the size of the specimen has to be taken into account. The length of the head, measured to the branchial aperture, and the number of branchial pouches are the only other characters that seem of any value.

Of three new species described, two, *M. atlantica* and *M. capensis*, are each based on a single unsatisfactory specimen. But, taking into consideration the locality and that in one or more characters they appear to be outside the limits of variation of the other known species, it seems better to describe them than to postpone this revision indefinitely in the hope of more material.

1. *Myxine garmani*.

Myxine garmani, Jord. & Snyd. Proc. U.S. Nat. Mus. xxiii. 1901, p. 731.

6 branchial pouches. 11 or 12 teeth in the first series, the

3 most anterior ones united; 10 or 11 teeth in the second series, the 2 most anterior ones united. Pores 26–27 + 57–61 + 12–13. Length of head $3\frac{2}{5}$ in the total length.

Japan.

1-3. 310–520 mm. *Hyalonema* Ground, 345 fath. 'Challenger.'

2. *Myxine tridentiger.*

Myxine australis (part.), Günth. Cat. Fish. viii. p. 511 (1870); 'Challenger' Deep-sea Fish. p. 267 (1887).
Myxine tridentiger, Garman, Mem. Mus. Comp. Zool. xxvi. 1899, p. 345.

6 branchial pouches. 10 teeth in each series, the 3 most anterior in the first series and the 2 most anterior in the second series united. Pores 22 + 62 + 9. Length of head $3\frac{2}{3}$ in the total length. Left branchial aperture widely separated from that of the œsophageal duct.

Straits of Magellan.

1. 460 mm. (type of the species). Sandy Point. Dr. Cunningham.

3. *Myxine circifrons.*

Myxine circifrons, Garman, Mem. Mus. Comp. Zool. xxvi. 1899, p. 344, pl. lxviii. figs. 1–4.

5 branchial pouches. 13 teeth in the first series, the 3 most anterior united; 11 teeth in the second series, the 2 most anterior united. Pores 21–23 + 59 + 11. Length of head a little less than $\frac{1}{3}$ of the total length.

Total length 470 mm.

7° 30′ 36″ N., 78° 39′ W., 730 fathoms.

4. *Myxine paucidens*, sp. n.

6 branchial pouches. 6 teeth in the first series and 7 in the second; the 2 most anterior teeth of each series united. Pores 26 + 53–57 + 10. Length of head $3\frac{3}{5}$ in the total length.

Japan.

1-2. 240 & 305 mm. (types). *Hyalonema* Ground, 345 fath. 'Challenger.'

5. *Myxine australis.*

Myxine australis, Jenyns, Zool. 'Beagle,' Fish. p. 159 (1842); Garm. Mem. Mus. Comp. Zool. xxiv. 1899, p. 345.
Myxine affinis, Günth. Cat. Fish. viii. p. 511 (1870).
Myxine australis (part.), Günth. *l. c.*
Myxine acutifrons, Garm. *t. c.* p. 347.

6 branchial pouches. 8 to 11 teeth in each series, the 2 most anterior united. Pores 27–36 + 56–68 + 8–13. Length of head $3\frac{1}{4}$ to $3\frac{3}{4}$ in the total length.
Chile and Patagonia.

1.	490 mm. (teeth $\frac{11}{11}$).	Orange Bay.	Paris Mus.
2.	430 mm. (teeth $\frac{11}{11}$).	Cape Gregory.	Dr. Coppinger.
3.	375 mm. (teeth $\frac{10}{11}$).	Messier Channel.	'Challenger.'
4–6.	325–370 mm. (teeth $\frac{10-11}{10-11}$).	Sandy Point.	Dr. Cunningham.
7–10.	165–400 mm. (teeth $\frac{8-10}{9-10}$).	Puerto Bueno.	Dr. Coppinger.
11.	330 mm., type of *M. affinis* (teeth $\frac{11}{11}$).	——	Dr. Günther.
12.	320 mm. (teeth $\frac{9}{9}$).	Cockle Cove.	Dr. Coppinger.
13–14.	250–285 mm. (teeth $\frac{8}{8-9}$).	Tyssar Islands.	Dr. Cunningham.
15.	275 mm. (teeth $\frac{8}{9}$).	Magellan.	Mus. Comp. Zool.

6. *Myxine glutinosa.*

Myxine glutinosa, Linn. Syst. Nat. ed. 10, i. p. 650 (1755); Günth. Cat. Fish. viii. p. 510 (1870); Garman, Mem. Mus. Comp. Zool. xxiv. 1899, p. 348.
Gastrobranchus cæcus, Bloch, Ausland. Fisch. xii. p. 66, pl. ccccxiii. (1795).

6 (exceptionally 7) branchial pouches. 7 to 9 teeth in the first series and 8 to 10 in the second, the 2 most anterior teeth in each series united. Pores 24–34 + 54–64 + 10–14. Length of head $3\frac{2}{5}$ to 4 in the total length.
Northern and western coasts of Europe.

1–2.	370–400 mm. (teeth $\frac{9}{9-10}$).	Firth of Forth.	Granton Mar. Stat.
3–6, 7–8.	300–370 mm. (teeth $\frac{8}{9}$).	,,	,,
9–12.	330–350 mm. (teeth $\frac{8}{9}$).	Scotland.	Sir John Murray.
13.	300 mm. (teeth $\frac{7}{8}$).	,,	,,
14–15.	310–330 mm. (teeth $\frac{8}{9}$).	Christiansund, Norway.	Lord Ducie.

16. 320 mm. (teeth $\frac{8}{9}$).	——	V. Fritsch.
17. 310 mm. (teeth $\frac{8}{9}$).	Newcastle-on-Tyne.	Dr W. G. Ridewood.
18–20. 240–270 mm. (teeth $\frac{7-8}{8-9}$).	Between Shetland and Faroe Is., 545–780 metres.	Prof. D'Arcy Thompson.
21. 265 mm. (teeth $\frac{8}{9}$).	Firth of Forth.	Mr. Adamson.
22. 220 mm. (teeth $\frac{9}{9}$).	Christiansund.	F. Sandeman, Esq.
23. 200 mm. (teeth $\frac{8}{8}$).	Newcastle-on-Tyne.	Mr. Woodfall.

7. *Myxine limosa.*

Myxine limosa, Girard, Proc. Ac. Philad. 1858, p. 223; Garman, Mem. Mus. Comp. Zool. xxiv. 1899, p. 348.
Myxine glutinosa, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 7.

6 branchial pouches. 9 teeth in the first series and 10 in the second, the 2 most anterior teeth in each series united. Pores 26 + 70 + 10. Length of head $3\frac{3}{4}$ in the total length.

Atlantic coasts of North America.

1. 340 mm.	Bay of Fundy, 30 fath.	F. Day, Esq.

8. *Myxine atlantica*, sp. n.

6 branchial pouches. 9 teeth in the first series and 8 in the second, the two most anterior teeth in each series united. Pores 28 + 64 + 12. Length of head $3\frac{1}{2}$ in the total length.

Western North Atlantic.

1. 310 mm. (type of the species).	44° 17′ N., 58° 10′ W., 120 fath.	Smithsonian Inst.

9. *Myxine capensis*, sp. n.

7 branchial pouches. Pores 30 + 58 + 11. Length of head $3\frac{1}{5}$ in the total length.

South Africa.

1. 310 mm. (type of the species).	Cape of Good Hope, 110 fath.	Dr. J. D. F. Gilchrist.

Unfortunately the teeth are imperfect; there may have been 8 or 9 in each series.